*भारतीय मानक*
*Indian Standard*

**IS 3077 : 2022**

# भुनी हुई तथा पिसी हुई कॉफ़ी — विशिष्टि

*( तीसरा पुनरीक्षण )*

# Roasted and Ground Coffee — Specification

*( Third Revision )*

ICS 67.140.20



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## FOREWORD

This Indian Standard (Third Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Stimulant Foods Sectional Committee had been approved by the Food and Agriculture Division Council.

The roasted and ground coffee is obtained by roasting, under suitable conditions, pure coffee seeds so as to develop full coffee aroma. The seeds after roasting are ground to desired particle size.

This standard was originally published in 1965 and subsequently revised in 1971 and 1992. The second revision was later amended in 1995 to introduce a scheme for labelling environment friendly products with the ECO-Mark at the instance of the Ministry of Environment and Forests (MoEF), Government of India. This amendment was based on the Gazette Notification No. 678 (E) dated 30 August 1994 for labelling edible oils, tea and coffee as environment friendly products, published by the Ministry of Environment and Forests. The ECO Mark would be administered by the Bureau of Indian Standards (BIS) under the *Bureau of Indian Standards Act,* 2016 as per the Resolution No. 71 dated 20 February 1991 as published in the Gazette of the Government of India vide GSR No. 85(E) dated 21 February 1991. For a product to be eligible for ECO Mark, it shall also carry the Standard Mark of BIS for quality besides meeting additional environmental-friendly (EF) requirements. Subsequently, amendments were issued to IS 3077 : 1992 in October 1996, January 2007 and December 2009.

This revision has been undertaken to include the specifications for decaffeinated roasted and ground coffee in line with the *Food Safety and Standards* (*Food Products Standards and Food Additives*) *Regulations*, 2011. The amendments issued to the second revision of IS 3077 have also been incorporated in this revision.

In the formulation of this standard, due consideration has been given to the provisions of the *Food Safety and Standards Act*, 2006 and the *Rules* and *Regulations* framed thereunder and the *Legal Metrology* (*Packaged Commodities*) *Rules*, 2011. However, this standard is subject to the restrictions imposed under these, wherever applicable.

The composition of the Committee responsible for formulation of the standard is given in Annex L.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated, expressing the result of a test or analysis shall be rounded off in accordance with IS 2 : 1960 ‘Rules for rounding off numerical values ( *revised* )’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

# *Indian Standard*

# ROASTED AND GROUND COFFEE — SPECIFICATION

*( Third Revision )*

## 1 SCOPE

**1.1** This standard prescribes the requirements and the methods of sampling and test for roasted and ground coffee.

**1.1.1** The requirements of decaffeinated roasted and ground coffee are also covered in this standard.

## 2 REFERENCES

The standards given below contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of these standards.

| *IS No.* | *Title* |
|---|---|
| 265 : 1993 | Hydrochloric acid — Specification (*fourth revision*) |
| 460 | Test sieves — Specification |
| Part 1 : 2020 | Wire cloth test sieves (*fourth revision*) |
| Part 2 : 2020 | Perforated plate test sieves (*fourth revision*) |
| 1699 : 1995 | Methods of sampling and test for food colours (*second revision*) |
| 2491 : 2013 | Food hygiene — General principles — Code of practice (*third revision)* |
| 4905 : 2015/ ISO 24153 : 2009 | Random sampling and randomization procedures (*first revision*) |
| 16028 : 2012/ ISO 20481 : 2008 | Coffee and coffee products — Determination of the caffeine content using high performance liquid chromatography (HPLC) — Reference method |
| 16029 : 2012/ ISO 11817 : 1994 | Roasted ground coffee — Determination of moisture content — Karl Fischer method (Reference method) |
| 16030 : 2012/ ISO 11294 : 1994 | Roasted ground coffee — Determination of moisture content — Method by determination of loss in mass at 103 °C (Routine method) |

## 3 REQUIREMENTS

### 3.1 Description

**3.1.1** *Roasted and Ground Coffee*

The product shall be prepared by roasting and grinding the properly cleaned dried seeds of *Coffea arabica*, *Coffea liberica*, *Coffee excelsa* or *Coffea canephora* (*robusta*) with their husks (mesocarp and endocarp) removed.

**3.1.2** *Decaffeinated Roasted and Ground Coffee*

The product shall be prepared by roasting and grinding the properly cleaned dried seeds of *Coffea arabica*, *Coffea liberica*, *Coffee excelsa* or *Coffea canephora* (*robusta*) with their husks (mesocarp and endocarp) removed and decaffeinated to remove nearly all the caffeine from the beans. Decaffeination is carried out while the beans are in green form, before they are roasted.

**3.1.3** Coffee seeds from which the product is prepared and the final product shall be free from any artificial colouring, flavouring, facing extraneous matter or glazing substance and shall be in sound, dry and fresh condition, free from rancid or obnoxious flavour. Coffee seeds, however, may contain silver skin. The product shall not contain any substances other than those derived from its extractions. Coffee seeds of either a single type or grade or a blend of different types and grades may be used for roasting and grinding. The roasting may be carried out to the desired colour, designated as light roast, medium roast and dark roast, the degree of roast being determined by the method prescribed in Annex A.

### 3.2 Cup Test

The product shall be evaluated for cup test in accordance with the procedure prescribed in Annex B.

### 3.3 Determination of Grind (Particle Size)

The product shall be graded as extra fine, fine, medium and coarse in accordance with Table 1. The particle size shall be determined by the method prescribed in Annex C.

**3.4** The product shall also comply with requirements given in Table 2.

**3.5** The copper content in soluble coffee powder shall not exceed 30 ppm when tested by atomic absorption spectrophotometer as per the method prescribed in **15.1** of IS 1699.

### 3.6 Hygienic Conditions

The product shall be manufactured in premises built and maintained under hygienic conditions (*see* IS 2491). The handling equipment like roasters, grinders and packing equipment shall be clean and free from any objectionable odour.

### 3.7 Requirements for ECO Mark

**3.7.1** *General Requirements*

**3.7.1.1** The product shall conform to the requirements of quality prescribed under **3.1** to **3.6**.

**3.7.1.2** The product manufacturer shall produce the consent clearance as per the provisions of *Water* (*Prevention and Control of Pollution*) *Act*, 1974 and *Air* (*Prevention and Control of Pollution*) *Act*, 1981, *Water* (*Prevention and Control of Pollution*) *Cess Act*, 1977 respectively along with the authorisation if required, under *Environment* (*Protection*) *Act*, 1986 and the Rules made thereunder to Bureau of Indian Standards while applying for the ECO Mark; and the product shall be in accordance with the *Food Safety and Standards Act,* and the *Rules* and *Regulations* made thereunder unless otherwise specified.

**Table 1 Particle Size of Roasted and Ground Coffee and Decaffeinated Roasted and Ground Coffee**

( *Clause* 3.3 )

| Type | Percentage by Mass Retained on 710 Micron IS Sieve, *Max* | Percentage by Mass Retained on 500 Micron IS Sieve, *Max* | Percentage by Mass Passing through 355 Micron IS Sieve, *Max* |
|---|---|---|---|
| (1) | (2) | (3) | (4) |
| Extra fine | 5 | 10 | Above 50 |
| Fine | 10 | 15 | 50 |
| Medium | 20 | 20 | 30 |
| Coarse | 30 | 35 | 15 |

**Table 2 Requirements for Roasted and Ground Coffee and Decaffeinated Roasted and Ground Coffee**

**(** *Clause* 3.4 **)**

| Sl No. | Characteristic | Requirement | | Method of Test, Ref to |
|---|---|---|---|---|
| | | Roasted and Ground Coffee | Decaffeinated Roasted and Ground Coffee | |
| (1) | (2) | (3) | (4) | (5) |
| i) | Moisture content, percent by mass, *Max* | 4.0 | 4.0 | IS 16029 for reference purpose and IS 16030 for routine purpose |
| ii) | Caffeine (on dry basis), percent by mass | *Min* 1.0 | *Max* 0.1 | IS 16028 |
| iii) | Total ash (on dry basis), percent by mass, *Max* | 3.0 to 6.0 | 3.0 to 6.0 | Annex D |
| iv) | Acid insoluble ash, percent by mass (on dry basis), *Max* | 0.1 | 0.1 | Annex E |
| v) | Water soluble ash (on dry basis), percent by mass, *Min* | 65.0 | 65.0 | Annex F |
| vi) | Alkalinity of soluble ash in millilitres of 0.1 N hydrochloric acid per gram of material (on dry basis) | 3.5 to 5.0 | 3.5 to 5.0 | Annex G |
| vii) | Water soluble matter or aqueous extracts (on dry basis), percent by mass | 26.0 to 35.0 | 26.0 to 35.0 | Annex H |
| viii) | Petroleum ether extract (on dry basis), percent by mass, *Min* | 8.5 | 8.5 | Annex J |

**3.7.1.3** The product/packing shall display in brief the criteria based on which the product has been labelled environment friendly.

**3.7.1.4** The material used for product/packaging shall be recyclable (that is, which can be reprocessed to manufacture any other useful product) or biodegradable and the parameters evolved under the SLEFP on the specific subject of packaging shall apply.

**3.7.2** *Specific Requirements*

**3.7.2.1** The product shall be free from infestation due to insects, fungus and rodents.

**3.7.2.2** The product shall be free from extraneous matter like strings, stones, dirt, wood, glass and metallic pieces and from any added colouring and flavouring. It shall also be free from rancidity and shall have its characteristic flavour.

**3.7.2.3** The product shall be free from adulterants like dandelion (excluding chicory), nerons, figs, dates, stones and cereals.

**3.7.2.4** The pesticides residues (if any) in the product shall not exceed the limits as prescribed in *Food Safety and Standards* (*Contaminants, Toxins and Residues*) *Regulations, 2011*, when tested by the methods given in the relevant Indian Standards specifications.

## 4 PACKING AND MARKING

### 4.1 Packing

The product shall be packed in quantities as stipulated under the *Legal Metrology* (*Packaged Commodities*) *Rules*, 2011 as well as in accordance with requirements under the *Food Safety and Standards (Packaging) Regulations,* 2018. The product shall be packed in clean, sound and odour free air tight containers made of tin plate, glass or metal foil laminates with food grade plastic lining.

NOTE — Other food grade packing materials can be used subject to their suitability being established.

### 4.2 Marking

**4.2.1** The following particulars shall be marked or labelled legibly and indelibly on each container:

a) Name of the material and brand name (if any);
b) Name and address of the manufacturer;
c) Batch or code number;
d) Month and year of manufacture;
e) Net quantity;
f) Best before…….....month…….year;
g) Directions for storage;
h) Any other information required under the *Legal Metrology (Packaged Commodities) Rules,* 2011 and the *Food Safety and Standards (Labelling and Display) Regulations,* 2020 and
j) The following cautionary note shall be printed on metal foil laminate containers with plastic lining/ flexible containers:

‘ONCE OPENED, TRANSFER CONTENTSIMMEDIATELY INTO AIR-TIGHT CONTAINER’

**4.2.2** *BIS Certification Marking*

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

**4.2.3** The product may also be marked with ECO-Mark and the details are available with the Bureau of Indian Standards.

## 5 SAMPLING

Representative samples of the material shall be drawn and criteria for ascertaining conformity of the material to the requirements of this specification shall be as prescribed in Annex K, except moisture for which from each batch, before packing, a sample shall be taken and sealed suitably.

# ANNEX A

( *Clause* 3.1.3 )

## DETERMINATION OF COLOUR AND ROAST

### A-1 APPARATUS

Photo-electric reflection meter, of suitable type with search unit 610 Y and tristimulus green filter.

### A-2 PROCEDURE

**A-2.1** Measure the colour (Y-value) of the product by taking the reading in the photo-electric reflection meter using tristimulus green filter. The percent reflectance is recorded as Y-value.

### A-2.2 Grading

The material shall be graded in the following manner:

| Y-value Reading | Grading |
|---|---|
| 5.6 to 6.5 | Light roast |
| 4.1 to 5.5 | Medium roast |
| 3.0 to 4.0 | Dark roast |

# ANNEX B

( *Clause* 3.2 )

## CUP-TEST

### B-1 PROCEDURE

**B-1.1** Note the colour, appearance and aroma of the material.

**B-1.2 Cup-Test**

Take 10 g of sample in a 250 ml cup and add 200 ml of chlorine-free soft water just brought to the boil. Mix well and allow it to brew for six minutes. Study the acidity, body, and flavour of the liquor. Serve the coffee in porcelain or glass containers in at least 50 ml portions at a temperature of 60 + 2°C.

### B-2 EVALUATION OF THE LIQUOR

**B-2.1** Evaluate the cup as per the details given below in the score card. If more than one sample is required to be evaluated at one time, the score card may be modified.

**SCORE CARD**

Name…… Date……

Batch/Code No …… Time……

a) Assign scores for each quality attribute:

| Quality Attribute | Max Score | Score |
|---|---|---|
| 1) Acidity | 4 | |
| 2) Body | 8 | |
| 3) Flavour | 8 | |

b) Indicate, if any, the degree of the defects, such as the following, by denoting Suspicion (S), Slight (Sl) or Pronounced (P):

| |
|---|
| Bricky |
| Chemical |
| Earthy |
| Fruity |
| Fermented |
| Grassy |
| Harsh |
| Musty |
| Oily |
| Sour |
| Spicy |
| Stale |
| Unclean |
| Woody |

**B-2.2** For defects, deduct 1, 2 or 3 marks depending upon the classification of the defect under suspicion, slight or pronounced.

**B-2.3** On the basis of the net score, final evaluation shall be under the following categories:

| Fine | Good | Fair | Failing off | Poor |
|---|---|---|---|---|
| 16-20 | 12-15 | 9-11 | 7-a | 0-6 |

**B-2.4** The product shall be deemed to have passed the test, if the net score is 11 and above.

# ANNEX C

( *Clause* 3.3 )

## DETERMINATION OF PARTICLE SIZE

### C-1 APPARATUS

**C-1.1 Sieves** (*see* IS 460 Parts 1 and 2):

a) 710 micron IS Sieve;
b) 500 micron IS Sieve; and
c) 355 micron IS Sieve.

**C-1.2 Fan**, fitted to the sieves.

**C-1.3 Shaking Machine**, of suitable type, adjusted for 28 to 30 shakes per minute.

### C-2 PROCEDURE

**C-2.1** Make a representative sample by mixing thoroughly 100 g of the sample. Weigh the pan and the 710 micron, 500 micron and 355 micron IS Sieves individually and record the mass. Stack them in the proper order and pour the sample into the top screen and then close. Fix the unit to a shaking machine and shake the sample for 5 min. After 5 min of shaking, reweigh the sieves and the pan. Repeat the experiment once again in the same manner. Report the data as follows:

**C-2.2** Calculate the average of the two experiments as grams of coffee retained on 710 micron, 500 micron and 355 micron IS Sieve and grade as indicated in Table 1.

| | **Trail 1** | **Trail 2** |
|---|---|---|
| Mass in g, of the sample taken | 100 | 100 |
| Mass in g, of 710 micron IS Sieve and coffee | *a* | *m* |
| Mass in g, of sieve alone | *b* | *n* |
| Mass in g, of coffee | $a - b$ | $m - n$ |
| Mass in g, of 500 micron IS Sieve and coffee | *c* | *p* |
| Mass in g, of sieve alone | *d* | *q* |
| Mass in g, of coffee | $c - d$ | $p - q$ |
| Mass in g, of 355 micron IS Sieve and coffee | *e* | *r* |
| Mass in g, of sieve alone | *f* | *s* |
| Mass in g, of coffee | $e - f$ | $r - s$ |

# ANNEX D

[ *Table* 2, *Item* (iii) ]

## DETERMINATION OF TOTAL ASH CONTENT

### D-1 PROCEDURE

Weigh accurately about 5 g of the material in a dry tared platinum dish. Then, heat slowly over a flame until swelling ceases taking care that the material does not catch fire. Ignite in a muffle furnace at 550 ± 10 ºC until grey ash results. Heat the dish again at 550 ± 10 ºC for 30 min. Cool the dish in a desiccator and weigh. Repeat this process of heating for 30 min, cooling and weighing, till the difference in mass between two successive weighings is less than one milligram. Record the lowest mass.

NOTE — Preserve the dish containing this ash for the determination of acid insoluble ash (*see* **E-2**).

### D-2 CALCULATION

Total ash (on dry basis), percent by mass =

$$\frac{10\,000\,(M_2 - M)}{(M_1 - M)\,(100 - M_2)}$$

where

$M_2$ = mass in g, of dish with the ash;

$M$ = mass in g, of empty dish;

$M_1$ = mass in g, of dish with the material; and

$M_3$ = percent of moisture in the sample as determined by the method prescribed in IS 16029 or IS 16030.

# ANNEX E

[ *Table* 2, *Item* (iv) ]

## DETERMINATION OF ACID INSOLUBLE ASH

### E-1 REAGENT

Dilute hydrochloric acid, approximately 5 N prepared from concentrated hydrochloric acid (*see* IS 265).

### E-2 PROCEDURE

To the ash contained in the dish (*see* **E-1**), add 25 ml of dilute hydrochloric acid, cover the dish with a watch glass and heat it on a water bath for 10 min. Allow to cool and filter the contents of the dish through Whatman filter paper No. 42 or its equivalent. Wash the filter paper till the washings are free from the acid. Return the filter paper and the residue to the dish. Keep it in an electric air-oven maintained at 135 $\pm$ 2 °C for about 3 h. Ignite in a muffle furnace at 550 $\pm$ 10 °C for one hour. Cool the dish in a desiccator and weigh. Repeat the process of igniting in a muffle furnace, cooling and weighing at half-hour intervals until the difference in mass between two successive weighings is less than one milligram. Record the lowest mass.

### E-3 CALCULATION

Total ash (on dry basis), percent by mass =

$$\frac{10\,000\,(M_2 - M)}{(M_1 - M)\,(100 - M)}$$

where,

$M_2$ = mass in g, of dish with the ash;

$M$ = mass in g, of empty dish;

$M_1$ = mass in g, of dish with the material, and

$M_3$ = percent of moisture as determined by the method prescribed in IS 16029 or IS 16030.

# ANNEX F

[ *Table* 2, *Item* (v) ]

## DETERMINATION OF WATER SOLUBLE ASH

### F-1 PROCEDURE

**F-1.1** Proceed as in Annex E to obtain the total ash. Add 25 ml of water to the ash, stir well, boil for a minute and then filter through Whatman filter paper No. 42 or its equivalent. Collect the filtrate in a 150 ml beaker, wash the filter paper 4 to 5 times with hot water and collect the washings in the same beaker. Preserve the combined filtrates for estimation of alkalinity of soluble ash (*see* **G-2.1**).

**F-1.2** Dry the filter paper containing the residue in an oven and then ignite it carefully in a weighed platinum or other suitable dish. Complete the ashing in a muffle furnace at 550 ± 10 °C for one hour, cool in a desiccator and weigh. Repeat the ignition in the muffle furnace for 30 min, cool and reweigh. Repeat this process till the difference between two consecutive weighings is less than one milligram. Record the lowest mass.

### F-2 CALCULATION

**F-2.1** Acid insoluble ash (on dry basis), percent by mass =

$$\frac{10000(M_2 - M)}{(M_1 - M)\,(100 - M_2)}$$

where

$M_2$ = mass in g, of dish with acid insoluble ash;

$M$ = mass in g, of empty dish;

$M_1$ = mass in g, of dish with the material; and

$M_3$ = the percentage of moisture as determined by the method prescribed in IS 16029 or IS 16030.

**F-2.2** Water soluble ash, percent by mass = A – B

where

A = total ash, percent by mass; and

B = water insoluble ash, percent by mass.

**F-2.3** Water soluble ash of total ash, percent by mass =

# ANNEX G

[ *Table* 2, *Item* (vi) ]

## DETERMINATION OF ALKALINITY OF SOLUBLE ASH

### G-1 REAGENTS

**G-1.1 Standard Hydrochloric Acid**, 0.1 N.

**G-1.2 Methyl Orange Indicator**

Dissolve 0.5 g of methyl orange in 500 ml of distilled water. Filter, if necessary.

### G-2 PROCEDURE

**G-2.1** Titrate the filtrate obtained with standard hydrochloric acid, using the methyl orange indicator.

**G-2.2** Calculate the quantity of 0.1 N hydrochloric acid required to neutralize the water soluble ash from one gram of the dry material.

# ANNEX H

[ *Table* 2, *Item* (vii) ]

## DETERMINATION OF WATER SOLUBLE MATTER

### H-L PROCEDURE

Weigh accurately about 2 g of the material in a 500 ml Erlenmeyer flask and add 200 ml of water and reflux over a low flame for one hour. Cool and filter through a Whatman filter paper No. 1 or its equivalent. Wash three times with 10 to 15 ml of water and finally make up to 250 ml in a graduated flask. Shake well and pipette 50 ml aliquot in a tared dish and evaporate on a water-bath. After complete evaporation, dry for one hour in an oven at 100 ± 2 °C, cool in a desiccator and weigh. Dry again at 100 ± 2 °C for 30 min, cooling in a desiccator and weighing until the loss in mass between the successive weighings is less than one milligram. Record the lowest mass.

### H-2 CALCULATION

Water soluble matter (on dry basis), percent by mass =

where

$M_2$ = mass in g, of the dish with the dried water soluble matter;

$M_1$ = mass, in g, of the empty dish;

$M$ = calculated mass in g, of sample taken for the test; and

$X$ = the percentage of moisture as determined by the method prescribed in IS 16029 or IS 16030.

# ANNEX J

[ *Table* 2, *Item* (viii) ]

## DETERMINATION OF PETROLEUM ETHER EXTRACT

### J-1 APPARATUS

Soxhlet extraction apparatus.

### J-2 REAGENT

Petroleum ether, distilled below 60 percent.

### J-3 PROCEDURE

Weigh accurately about 10 g of the material in a suitable thimble and dry for 2 h at 100 + 2 °C. Place the thimble in the Soxhlet extraction apparatus and extract with the solvent for about 16 h. Dry the extract contained in the Soxhlet flask, the empty mass of which has been previously determined, at 95 to 100 °C for an hour. Cool in a desiccator and weigh. Continue the alternate drying and weighing at 30 min intervals until the loss in mass between two successive weighings is not more than one milligram. Record the lowest mass.

### J-4 CALCULATION

Petroleum ether extract (on dry basis), percent by mass =

$$\frac{10\,000\,(M_1 - M_2)}{M\,(100 - X)}$$

where

$M_1$ = mass in g, of the Soxhlet flask with the petroleum ether extract;

$M_2$ = mass in g, of the empty Soxhlet flask, clean and dry;

$M$ = mass in g, of the material taken for the test; and

$X$ = the percentage of moisture as determined by the method prescribed in IS 16029 or IS 16030.

# ANNEX K

( *Clause* 5 )

## SAMPLING OF ROASTED AND GROUND COFFEE & DECAFFEINATED ROASTED AND GROUND COFFEE

### K-1 GENERAL REQUIREMENTS OF SAMPLING

**K-1.0** In drawing, preparing, storing and handling samples, the precautions and directions given in **K-1.1** to K-**1.6** shall be observed.

**K-1.1** Samples shall be taken in a protected place not exposed to damp air, dust or soot.

**K-l.2** The sampling instrument, preferably a spoon or spatula, shall be clean and dry when used.

**K-1.3** The samples, the material being sampled, the sampling instrument and the containers for samples, shall be protected from adventitious contamination.

**K-1.4** The samples shall be placed in clean and dry glass or tin containers. The sample containers shall be of such a size that they are almost completely filled by the sample.

**K-1.5** Each container shall be sealed air-tight after filling and marked with full details of sampling, batch or code number, name of the manufacturer and other important particulars of the consignment and lot.

**K-1.6** Samples shall be stored in such a manner that the temperature of the material does not vary unduly from the normal temperature and that they are protected from light.

### K-2 SCALE OF SAMPLING

#### K-2.1 Lot

All the containers of the same size in a single consignment of material drawn from a single batch of manufacture shall constitute a lot.

**K-2.2** Samples shall be tested for each lot separately for ascertaining conformity of the materials to the requirements of this specification. The number of containers to be selected from the lot shall depend on the size of the lot and shall be in accordance with co1 1 and 2 of Tables 3 and 4.

**K-2.2.1** The containers shall be chosen at random from the lot. In order to ensure randomness of selection, procedures given in IS 4905 may be followed.

**Table 3 Sampling of Containers of Net Content Less than 500 g**

( *Clauses* K-2.2 *and* K-3.0 )

| Number of Container in the Lot N | Total Number of Containers to be Selected n | Number of Groups into which Sample Containers have to be Divided |
|---|---|---|
| (1) | (2) | (3) |
| 1 to 50 | 9 | 1 |
| 301 to 500 | 18 | 2 |
| ,, | 20 | 2 |
| 501 to 1 000 | 30 | 3 |
| 1 001 to 3 000 | 40 | 4 |
| 3 001 and above | 50 | 5 |

**Table 4 Sampling of Containers of Net Content |500 g or More**

( *Clauses* K-2.2 *and* K-3.0 )

| Number of Containers in the Lot N | Number of Containers to be Selected n |
|---|---|
| (1) | (2) |
| up to 50 | 2 |
| 51 ,, 300 | 3 |
| 301 ,, 500 | 4 |
| 501 ,, 1000 | 5 |
| 1000 and above | 6 |

### K-3 TEST SAMPLES AND REFEREE SAMPLES

**K-3.0** The sample containers of net contents less than 500 g selected according to **K-2.2** and col 1 and 2 of Table 3 shall be equally divided at random into a number of groups specified in co1 3 of Table 3. Each sample container of net content 500 g or more selected according to **K-2.2** and co1 1 and 2 of Table 4 shall be treated as one group.

#### K-3.1 Preparation of Individual Samples

The contents of all the containers in a group shall be poured out and mixed thoroughly. About 360 g of material shall be taken from this and divided into three

equal parts. Each part so obtained, shall be transferred to a sample container which shall be sealed air-tight and labelled with the particulars given in **K-1.5**. The sample so obtained shall be divided into three sets in such a way that each set has a sample representing each group. One of these sets shall be marked for the purchaser, another for the vendor and the third for the referee.

**K-3.2 Preparation of Composite Sample**

From the mixed material of each selected container remaining after taking the sample according to **K-3.1**, approximately equal quantities of material shall be taken and mixed together so as to form a composite sample weighing not less than 90 g. This composite sample shall be divided into, three equal parts and transferred to sample containers and labelled with all the particulars given in **K-1.5**. One of these composite samples shall be for the purchaser, another for the vender and the third for the referee. Referee sample shall consist of a set of samples obtained in **K-3.1** and a composite sample obtained according to **K-3.2**, marked for this purpose and shall bear the seals of the purchaser and the vendor. These shall be kept at a place and under conditions agreed to between the purchaser and the vendor.

## K-4 NUMBER OF TESTS AND CRITERIA FOR CONFORMITY

**K-4.1** The tests for the visual characteristics, particle size, water soluble matter and evaluation for cup-test shall be conducted individually on each of the sample containers from the lot.

**K-4.2** The tests for the determination of the remaining requirements of the standard other than moisture shall be done on the composite sample as obtained in **K-3.2**. The test for moisture shall be made for each batch of the sample meant for this purpose (*see* **5**).

## K-5 CRITERIA FOR CONFORMITY

**K-5.1** The lot shall be declared as conforming to the requirements of this specification if **K-5.1.1** and **K-5.1.2** are satisfied.

**K-5.1.1** The results of the tests conducted on the individual samples for the requirements specified in **K-4.1** shall satisfy the corresponding specification requirements as given in **3**.

**K-5.1.2** The results of the tests conducted on the composite sample for the remaining requirements shall satisfy the corresponding specification requirements as given in 3, and the sample meant for moisture shall satisfy the requirements for moisture.

# ANNEX L

( *Foreword* )

## COMMITTEE COMPOSITION

Stimulant Foods Sectional Committee, FAD 06

| *Organization* | *Representative(s)* |
|---|---|
| Tea Board India, Kolkata | Dr Biswajit Bera (***Chairman***) |
| Agricultural and Processed Food Products Export Development Authority (APEDA), New Delhi | Shri Devendra Prasad |
| CSIR-Central Food Technological Research Institute (CFTRI), Mysore | Dr Pushapa S. Murthy<br>Dr Devendra J. Haware (*Alternate*) |
| ICAR-Central Plantation Crops Research Institute (CPCRI), Kerala | Dr P. Chowdappa<br>Dr K. B. Hebbar (*Alternate*) |
| Coffee Board, Bengaluru | Dr K. Basavaraj<br>Dr I. M. Mandappa (*Alternate*) |
| Confederation of Indian Food Trade and Industry (CIFTI-FICCI), New Delhi | Ms Ranjeet Kaur<br>Ms Priyanka Sharma (*Alternate*) |
| Confederation of Indian Industry (CII), New Delhi | Ms Neha Aggarwal<br>Mr Rajesh Bhatia (*Alternate*) |
| Consumer Guidance Society of India (CGSI), Mumbai | Dr Sitaram Dixit |
| Consumer Research, Education, Action, Training and Empowerment (CREATE), Tamil Nadu | Prof Dr Duraisingam<br>Mr K. Suresh Kanna (*Alternate*) |
| Defence Food Research Laboratory (DFRL), Mysore | Dr T. Anand<br>Dr Rudragoud Policegoundra (*Alternate*) |
| Directorate of Cashewnut and Cocoa Development (DCCD), Cochin | Dr Venkatesh N. Huballi<br>Mr Appa Rao (*Alternate*) |
| Export Inspection Council (EIC) of India | Dr J. S. Reddy<br>Mr Sabeerali (*Alternate*) |
| Food Safety and Standards Authority of India (FSSAI), New Delhi | Ms Apoorva Srivastava |
| Hindustan Unilever Limited (HUL), Mumbai | Dr Sangeeta Chadha<br>Ms Neha Tyagi (*Alternate*) |
| ICAR-Indian Institute of Horticultural Research (IIHR), Bengaluru | Dr D. V. Sudhakar Rao<br>Dr R. B. Tiwari (*Alternate*) |
| ICAR-Central Plantation Crops Research Institute, Kasaragod | Dr P. Chowdappa<br>Dr K. B. Hebbar |
| Indian Tea Association, Kolkata | Mr Arijit Raha<br>Mr Sujit Patra (*Alternate*) |
| Nestle India Ltd, Gurugram | Dr Anirudha K. Chhonkar<br>Ms Dicksha Mathur (*Alternate*) |
| Tata Consumer Products Ltd, Bengaluru | Mr Naveen Kumar<br>Dr K. N.manikandan (*Alternate*) |
| Tea Board India, Kolkata | Dr Mahipal Singh<br>Dr Anirban Basu Majumder (*Alternate*) |
| Tea Research Association, Tocklai Tea Research Institute, Jorhat | Dr A. K. Barooah<br>Dr S. Sabhapondit (*Alternate*) |

| *Organization* | *Representative(s)* |
|---|---|
| The Central Arecanut & Cocoa Marketing & Processing Co-op Ltd (CAMPCO), Mangalore | Dr Rakshith Rai |
| The United Planters' Association of Southern India (UPASI) Tea Research Foundation, Valparai | Dr R. Victor J. Ilango<br>Dr Boopathiraj (*Alternate*) |
| BIS Directorate General | Shrimati Suneeti Toteja, Scientist 'E' and Head (FAD)<br>[Representing Director General (*Ex-officio*)] |

*Member Secretary*

Dr Bhawana
Scientist 'D' (FAD), BIS

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